

METHOD AND APPARATUS FOR DETECTING ENZYMATIC ACTIVITY USING MOLECULES THAT CHANGE ELECTROPHORETIC MOBILITY

Abstract of the Disclosure

5 The activity of oncogenic intracellular chemical reactions of molecules is measured by the use of fluorescently labeled substrate molecules that undergo a change in electrophoretic mobility upon a chemical reaction such as that catalyzed by an enzyme or kinase. Specificity is achieved by using labeled substrate molecules that can be acted upon only by specific oncogenic enzymes. Thus the activity of an oncogenic enzyme or class of oncogenic enzymes can be determined. Measurements are made with the intracellular presence of such substrate molecules, at some time of interest. To ensure accuracy, measurements must be made in a timely manner so as to minimize chemical reactions occurring subsequent to the time of interest. Fast controllable laser lysis is used to obtain the contents of said cell or cells into which reporter substrate molecules have been introduced. The cell contents are then subjected to capillary electrophoresis and oncogenic enzymatic activity is determined by comparing amounts of unaltered substrate molecules to the amounts of altered substrate molecules which are separated by the electrophoresis and identified by the presence of a fluorescent label.